

YERMO XANTHOCEPHALUS
(ASTERACEAE: SENECTIONEAE):
A NEW GENUS AND SPECIES FROM WYOMING

ROBERT D. DORN
Box 1471, Cheyenne, WY 82003

ABSTRACT

Yermo xanthocephalus, a new genus and species from Wyoming, is described and illustrated. It appears most closely related to species of *Cacalia* Section *Conophora* (*Mesadenia*, *Arnoglossum*) that occur in eastern and midwestern North America. It is unique in the entire cacalioid group and nearly unique in the family Asteraceae in having yellow involucre bracts. It also has yellow corollas, which are very rare in the cacalioid group.

I recently encountered a very unusual plant in the central Wyoming desert that was readily assigned to the Tribe Senecioneae in Asteraceae, but it did not closely resemble any genus in the region. Further study indicated that it was apparently most closely related to species of *Cacalia* Section *Conophora* (*Mesadenia*, *Arnoglossum*), particularly *Cacalia plantaginea* (Raf.) Shinnars (use of *Cacalia* in this paper is for reference only and should not imply that I agree with that use). Plants of this section occur in eastern and midwestern North America, over 1000 km to the E.

The newly discovered plant is unique in the cacalioid group in having yellow involucre bracts, a thick, elongate taproot, and in its distribution in a desert habitat. It also has yellow corollas, which are very rare in the group. The most closely related species (*Cacalia* Section *Conophora*) have green involucre bracts, fibrous or fleshy-fibrous roots sometimes crowned with a short tuber, white or whitish corollas, and they grow in moist or wet places. The yellow involucre bracts are very rare in the family, as I could not find reference to any North American species with yellow involucre bracts. The new species grows on the Split Rock Formation, which is of Miocene age (Van Houten 1964; Lohman and Andrews 1968). It is notable that in the Miocene, the temperate deciduous forest was being pushed eastward from Wyoming due to drying conditions (Dorn 1977). Species of *Cacalia* Section *Conophora* are found today in the eastern deciduous forest. The new species is likely derived from an extinct common ancestor. It appears to be quite old and perhaps on its way to extinction; there are ca. 500 plants on about 1 hectare. Similar habitats nearby were unoccupied by the species. The yellow involucre likely evolved to enhance pollination in a dry environment

where insects are less common than in moist locations. Ironically, this may prove to be the species' demise. Seed set in 1990 was almost nil due to insect destruction of the achenes and drought. Individuals came into flower at different times so that flowering occurred nearly throughout the summer. This is rather unusual for a desert plant in this area.

There has been considerable disagreement on generic classification in the cacalioid group of the tribe. It is doubtful if all of the genera recognized by Robinson and Brettell (1973a, b, c) and Nordenstam (1977) will be maintained. On the other hand, the broader concept of *Cacalia* of Pippen (1978) will likely require refinement once the evolutionary history of the group is better understood. The problems are reminiscent of those in the Tribe Astereae.

At the supraspecific level, one has two choices for classifying this new species: describe a new subgenus or section under the genus that includes *Cacalia plantaginea*, or describe a new genus. The best one can do is anticipate the probable outcome of a more stable classification by considering the evolving classification in other tribes where much more work has been done. Practical considerations for the present should not be ignored, however. When considering the evolving generic classification in the Tribe Astereae and differences between genera like *Aster*, *Erigeron*, *Conyza*, *Machaeranthera*, *Xylorhiza*, *Haplopappus*, and others, and practical matters, it seems most appropriate to erect a new genus to accommodate the newly discovered species. Perhaps it is justifiable on the basis of the yellow involucre alone.

***Yermo xanthocephalus* Dorn, gen. et sp. nov.** (Fig. 1)—TYPE: USA, Wyoming, Fremont Co., T31N R95W section line of SW $\frac{1}{4}$ of Sect. 27 and NW $\frac{1}{4}$ of Sect. 34, ca. 10 km N of Sweetwater Station, barren outcrop of white silty clay, 2040 m, 28 June 1990, *Dorn 5093* (holotype, RM; isotypes, to be distributed).

Herba perennis ad 3 dm alta; radice crassa elongata; foliis basali et alterno, coriaceis, lanceolatis ad ovatis vel obovatis, integris vel dentatis, 4–25 cm longis, 1–6 cm latis, sursum gradatim reductis; capitulis multis (25–180); involucre cylindrico 8–15 mm longo, tegulis 5(4–6) carinatus luteis cucullatis; receptaculo nudo; radiis nullis; floribus discis 5(4–6) luteis, tubo ca. 3 mm longo, fauce ca. 2 mm longa, lobis linearibus patentibus ca. 2 mm longis; pappo capilliformi deciduo; acheniis brunneis 6–7 mm longis ellipticus vel oblanceolatis.

Perennial herb, glabrous except sometimes the achenes; stems hollow, to 3 dm high, 1 to several from a thick, elongate taproot; leaves basal and alternate, petioled, coriaceous, lanceolate to ovate



FIG. 1. *Yermo xanthocephalus*. A. Habit. B. Individual head at left, top view of individual head in bud at right. C. Mature achene. D. Disk floret with pappus removed. E. Disk floret with pappus intact. F. Stigmas. G. Anther.

or obovate, entire to variously toothed, 4–25 cm long, 1–6 cm wide, gradually reduced upward, generally with a rounded fold lengthwise, the main 3 veins somewhat parallel; heads numerous (25–180), in a crowded corymbiform cyme; involucre cylindrical, 8–15 mm long, the bracts in a single series, usually 5, occasionally 4, rarely 6, strongly keeled, the keel greenish-yellow, the rest bright yellow but drying

pale, generally cucullate at tip, usually with a few much reduced bractlets at base; receptacle naked, flat or sometimes with a sharp projection from center; rays none; disk florets usually as many as involucre bracts (4–6) except sometimes fewer by abortion, barely exerted from involucre, yellow, the tube about 3 mm long, the throat about 2 mm long, the lobes linear, widely spreading and about 2 mm long; anthers with a pair of minute lobes at base; style branches obtuse-truncate and pubescent at tip, stigmatic surface covering entire inner face; pappus copious, of capillary bristles, subequal to corolla tube and throat, borne on an expanded disk at top of achene, deciduous in fruit; achenes often short-pubescent, usually about 10 nerved, brown, 6–7 mm long, slightly flattened, elliptic to oblanceolate in outline.

The bright yellow involucre, mostly 5 involucre bracts and 5 disk florets, lack of ray florets, yellow corollas with linear lobes, and the thick elongate taproot easily separate this genus from all the other genera in the Tribe Senecioneae. The yellow involucre alone will separate it from all genera of the Asteraceae in the region and most of the world.

The generic name is a Spanish word meaning uninhabited land or desert, descriptive of the location where the plant grows. The word is masculine. The translated Latin name provides a common name, desert yellowhead.

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